

# Volume 167 1986

## Contents

### Letters to the Editor

A warm molecular core associated with the compact H II region G 34.3+0.2

*Andersson, M., Garay, G.*

L1

Detection of the  $^2\Pi_{3/2}$  state of  $C_5H$

*Cernicharo, J., Kahane, C., Gómez-González, J., Guélin, M.*

L5

Detection of  $^{29}SiC_2$  and  $^{30}SiC_2$  toward IRC+10216

*Cernicharo, J., Kahane, C., Gómez-González, J., Guélin, M.*

L9

The millimeter wave spectrum of protonated  $N_2O$

*Bogey, M., Demuyne, C., Destombes, J.L., McKellar, A.R.W.*

L13

Speckle masking observation of the central object in the giant H II region NGC 3603

*Hofmann, K.-H., Weigelt, G.*

L15

The high velocity CO outflow in Orion

*Wilson, T.L., Serabyn, E., Henkel, C.*

L17

The minor axis profiles of galaxies with box- and peanut-shaped bulges

*Dettmar, R.-J., Wielebinski, R.*

L21

### Extragalactic astronomy

Gravitational amplification of brightest cluster galaxies by foreground clusters

*Hammer, F., Nottale, L.*

1

Late-type galaxies. The star formation rates (Text in German)

*Isserstedt, J., Schindler, R.*

11

The orbits of H I-deficient spiral galaxies in the Virgo cluster

*Giraud, E.*

25

The spatial structure of dwarf galaxies

*Feitzinger, J.V., Galinski, T.*

215

H I content versus star formation and ionized gas in early-type galaxies

*Balkowski, C., Alloin, D., LeDenmat, G.*

223

### Galactic structure and dynamics

The thickness of the hydrogen layer of the edge-on dwarf galaxy NGC 5023

*Bottema, R., Shostak, G.S., van der Kruit, P.C.*

34

Flyby: numerical experiments on a galaxy orbiting within a galaxy cluster

*Miller, R.H.*

41

### Formation, structure and evolution of stars

Analysis of the light curve of the eclipsing close binary system HD 149779

*vander Linden, D., Van Hamme, W., Jerzykiewicz, M., Sterken, C.*

53

The evolution of helium stars in the mass range 2.0 to  $4.0 M_{\odot}$

*Habets, G.M.H.J.*

61

Optical observations of RS Ophiuchi in quiescence

*Bruch, A.*

91

Absolute magnitudes and luminosity-related physical parameters of the "solar analog"-candidates 16 Cyg A and B

*Neckel, H.*

97

CO observations of dark clouds in Lupus

*Murphy, D.C., Cohen, R., May, J.*

234

The evolution of massive stars using a non-local theory of convection

*Da-run Xiong*

239

IRAS observations of OH/IR stars. Determination of absolute luminosities and mass loss rates

*Herman, J., Burger, J.H., Penninx, W.H.*

247

The mass spectrum of the white dwarfs in cataclysmic binaries: supplementary computations

*Ritter, H., Özkan, M.T.*

260

The evolution of very luminous stars. I. Presupernova evolution

*Langer, N., El Eid, M.F.*

265

The evolution of very luminous stars. II. Pair creation supernova in massive Wolf-Rayet stars

*El Eid, M.F., Langer, N.*

274

A new method of detecting frequency variations in variable stars applied to the  $\beta$  Cephei star  $\delta$  Ceti

*Cuypers, J.*

282

Absolute dimensions of eclipsing binaries. XIV. V 451 Ophiuchi

*Clausen, J.V., Giménez, A., Scarfe, C.*

287

**Stellar atmospheres**

Line formation in expanding atmospheres: lines from excited levels

Wessolowski, U., Hamann, W.-R. 106

Abundances of the rare-earth elements in Procyon

Kato, K., Sadakane, K. 111

Chromospheric emission luminosity versus rotation in late main sequence stars

Marilli, E., Catalano, S., Trigilio, C. 297

Line blanketing in model atmospheres of carbon stars

Ekberg, U., Eriksson, K., Gustafsson, B. 304

**Diffuse matter in space (including HII regions and planetary nebulae)**

The nature of the Vela supernova remnant

Milne, D.K., Manchester, R.N. 117

Non-spherical supernova remnants. III. Oblique shock reflections and anomalous H I velocity features

Rozyczka, M., Tenorio-Tagle, G., Bodenheimer, P. 120

Water maser emission from OH/IR stars

Engels, D., Schmid-Burgk, J., Walmsley, C.M. 129

Maps of Cassiopeia A and the Crab nebula at  $\lambda$  1.2 mm

Mezger, P.G., Tuffs, R.J., Chini, R., Kreysa, E., Gemünd, H.-P. 145

Observations of highly excited OH towards galactic H II regions

Walmsley, C.M., Baudry, A., Guilloteau, S., Winnberg, A. 151

The large globule Lynds 810 as a possible member of the Vulpecula OB1 complex

Turner, D.G. 157

Time-dependent chemistry in dense molecular clouds. IV. Interstellar grain surface reactions inferred from a matrix isolation study

Grim, R.J.A., d'Hendecourt, L.B. 161

The time behaviour of the  $8 \text{ km s}^{-1}$  water maser source in Orion

Abraham, Z., Vilas Boas, J.W.S., del Ciampo, L.F. 311

Dust emission spectra from star-forming regions

Chini, R., Krügel, E., Kreysa, E. 315

The circumstellar gas cloud around Beta Pictoris. II

Vidal-Madjar, A., Hobbs, L.M., Ferlet, R., Gry, C., Albert, C.E. 325

High-angular-resolution  $\text{NH}_3$  observations of the bipolar flow source near NGC 2071

Takano, T., Stutzki, J., Fukui, Y., Winnewisser, G. 333

Very small particles in spiral galaxies

Ghosh, S.K., Drapatz, S., Peppel, U.C. 341

**The Sun**

Spatial and temporal characteristics of flare energy release determined from X-ray and radio imaging observations

Hernandez, A.M., Machado, M.E., Vilmer, N., Trottet, G. 77

A study of solar filaments from high resolution microwave observations

Kundu, M.R., Melozzi, M., Shevgaonkar, R.K. 166

Emission of Lyman- $\alpha$  radiation by solar coronal loops. II. Filtergram analysis

Tsiropoula, G., Alissandrakis, C., Bonnet, R.M., Gouttebroze, P. 351

**The solar system**

A general survey of the gegenschein in blue light

Maucherat, A., Llebaria, A., Gonin, J.C. 173

Structure of Alfvén wings associated with a conductor moving through a magnetoplasma

Dobrowolny, M., Veltri, P. 179

The distribution of cometary magnitudes

Donnison, J.R. 359

Evolution of albedos of cometary dirty ice grains

Mukai, T., Fechtig, H., Grün, E., Giese, R.H., Mukai, S. 364

(RN) Dynamical properties of a pre-perihelion comet tail.

I. December 6, 1985 observations of P/Halley 82i  
Guérin, P., Kouchmy, S., Vial, J.C. 395

**Celestial mechanics and astrometry**

Comparison of observations of the Galilean satellites of Jupiter made with heliometers from 1891 to 1906 with modern ephemerides

Arlot, J.-E. 371

Critical orbits in the elliptic restricted three-body problem

Dvorak, R. 379

Optical and radio positions of  $\alpha$  Scorpii

Clauzet, L.B.F., Débarbat, S., Chollet, F. 387

**Physical and chemical processes**

The s-process branching at  $^{79}\text{Se}$

Walter, G., Beer, H., Käppeler, F., Reffo, G., Fabbri, F. 186

Resonance scattering and the diagnostic of very weak magnetic fields in diffuse media

Landolfi, M., Landi Degl'Innocenti, E. 200

**Instruments, data processing, and computational methods**

The University of Cologne 3-m radio telescope

Winnewisser, G., Bester, M., Ewald, R., Hilberath, W., Jacobs, K., Krotz-Vogel, W., Miller, M., Olberg, M., Pauls, T., Pofahl, E., Rau, G., Schieder, R., Stubbuch, H., Vowinkel, B., Wieners, C., Zensen, W. 207

Improvement of the Effelsberg 100 meter telescope based on holographic reflector surface measurement

Godwin, M.P., Schoessow, E.P., Grahl, B.H. 390

**Abstracts of articles which have been published in A. & A. Suppl. Ser. 65, No. 4**

IRAS catalogues and atlases. Atlas of low-resolution spectra

IRAS Science Team 398

**Abstracts of articles which have been published in A. & A. Suppl. Ser. 66, No. 1**

RI CCD photometry of three distant clusters of galaxies and BVRI photometry in three comparison fields

Le Fèvre, O., Mathez, G., Picat, J.P., Mauron, N., Mellier, Y. 398

**BW Vulpeculae: a coordinated campaign of photoelectric photometry from thirteen observatories**

*Sterken, C., Snowden, M., Africano, J., Antonelli, P., Catalano, F.A., Chahbenderian, M., Chavarria, C., Crinklaw, G., Cohen, H.L., Costa, V., de Lara, E., Delgado, A.J., Ducatel, D., Fried, R., Fu, H.-H., Garrido, R., Gilles, K., Gonzalez, S., Goodrich, B., Haag, C., Hensberge, H., Jung, J.H., Lee, S.-W., Le Contel, J.M. et al.* 398

**Photoelectric search for CP2-stars in open clusters. VIII. IC 2391 and NGC 2451**

*Maitzen, H.M., Catalano, F.A.* 399

**Four-colour photometry of eclipsing binaries. XXIB. Light curves of V346 Centauri**

*Giménez, A., Clausen, J.V., Helt, B.E., Vaz, L.P.R.* 399

**Spectral classification of bright stars in SMC clusters. II**

*Kontizas, E., Dapergolas, A., Kontizas, M.* 399

**The spectral energy distribution of early-type stars. I. A catalogue of photometric data of 259 stars from 0.15 to 4.8  $\mu\text{m}$**

*Thé, P.S., Wesselius, P.R., Janssen, I.M.H.H.* 400

**The giant, asymptotic and horizontal branches of globular clusters. III. Photographic photometry of NGC 6752**

*Buonanno, R., Caloi, V., Castellani, V., Corsi, C., Fusi Pecci, F., Gratton, R.* 400

**Coudé radial velocity observations at Calar Alto Observatory: zero-point and accuracy**

*Garcia, J.M., Andersen, J., Giménez, A., Nordström, B.* 400

**ANS UV observations of external galaxies. II. UV photometry of M 31, M 33, M 81, M 101, NGC 2403 and several Zwicky galaxies**

*Israel, F.P., de Boer, K.S., Bosma, A.* 401